ENGINEERING ROOM

# ELECTRICITY on the FARM

The National Magazine of Rural Electrification

**FEBRUARY**

**How Electricity Helped in '43**
**Hotbeds for Starting Plants**
**Simple Plumbing Repairs**
**Farmer Hasn't Hollered "Uncle"**
**Ed's Chick Raisin' Secrets**
**Portable Motor Speed Changer**
**Care of Your Electric Iron**

**1944**

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# PERSONALLY I'M PLANNING A *Universal* PEACE

The "U" Plan for "V" Day is going to bring some real peace and happiness into my life after the war! I'm going to have the best housekeeping aids that money can buy — appliances and housewares made by Universal! You'll be keen on this "U" Plan, too — whether you are dreaming of a new home, or planning to fix up your present one! Here's how it works: **(1)** Check on this page the Universal appliances you will need. **(2)** Add up their estimated values. **(3)** Put that sum into War Bonds. **(4)** Ask your local dealer today to put you on his priority list.

You make no down payment, you're under no obligation! But you do put yourself in line among the lucky "firsts" to get Universal products after Victory!

*Send for the "U" Plan for "V" Day Booklet which gives added details — write to Dept. EF,*

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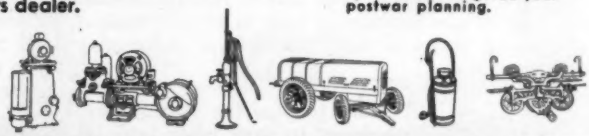
# The Best *Beauty Treatment* for a FARMER'S WIFE

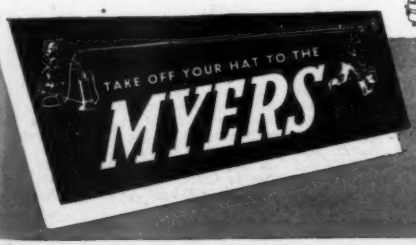
Running water in the kitchen — how it lightens and brightens cooking, dish-washing, canning, cleaning — makes it easier to be cheerful and keep looking young. Handy faucets in the laundry — how they put sunshine into blue Mondays and change tired lines to happy smiles. Running water in the bathroom — how important it is to glowing health and beauty.

Yes, running water in the country, as in the city, is a magic beauty treatment; gives you a "lift" that adds youth and charm — and gives you extra leisure to enjoy it.

What's more, running water is one of the greatest aids to profitable farming. Count its many advantages for better living and better farming and then plan to own a dependable, adequate capacity Myers Water System. Get running water first — it's a productive purchase. And get the complete satisfaction of a famous lifetime Myers. Talk it over with your Myers dealer.

**WARTIME MAINTENANCE AND PLANNING.** To help you keep present pumping equipment operating, mail coupon for free book on care and maintenance; also water system book to guide your postwar planning.



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# Editor's Chat

## IS IT WORN OUT?

When is an appliance or a machine or some other thing worn out? Need replacing?

Sixteen years ago I visited a farm in Tillamook county, Oregon. In the barn was a grain binder. It was a good barn, well painted and in clean surroundings. The binder looked like new. Upon inquiry, I found it had been used for twenty years. Grain was a secondary crop on that farm. The farmer took care of everything. His machinery was housed, painted, oiled and kept in repair. Since grain was not a primary crop, I have no doubt that binder is still giving good and satisfactory service.

But when does a lady's hat need replacing? Oh, that's different. The styles change. If the ladies are to operate efficiently and happily, most of them need new hats long before the old ones wear out.

In between hats and that binder is a long list of things. Some of them, like an axe need to be replaced only when they are worn out. With good care (such as the binder was given), that may be a long time. With poor care a good piece of equipment may be rusted, broken and the bearings hammered out from lack of oil and adjustment in a short time. Good care usually pays in better operation and avoidance of delays as well as lower costs. Sometimes, however, if you have an expanding grain program, for instance, it pays to discard or turn in the binder for a combine before the binder wears out,—obsolescence. You can *make* more with a new combine than you can *save* with the old binder.

Right now when there is very little new electric equipment to be had, there is just one rule for it. Take care of it. There will be no obsolescence so long as electric equipment factories are making war materials.

---

Now is the time to plan the year's work and repair machines to save labor later.

## LIBERTY

"The history of Liberty is a history of the limitation of governmental power, not the increase of it. When we resist, therefore, the concentration of power, we are resisting the process of death, because concentration of power is what always precedes the destruction of human liberties."—Woodrow Wilson.

Do we want *Liberty?*

Would we welcome after the war:

A return to Lincoln's "government of the people, *BY* the people, and *FOR* the people" in place of government *OF* the people, by the state, and for the votes of pressure groups?

A resumption of: "The powers not delegated to the United States by the Constitution, nor prohibited by it to the States, are reserved to the States respectively, or to THE PEOPLE?"—Tenth amendment to the Constitution. We've sort of forgotten that one.

The abrogation of all grants of special authority or power to the executive branch of the government that belong to the legislative or judicial branches or to the people, with the attendant abolition of executive bureaus and commissions which now restrict our liberty, bedevil our daily actions and add mountains of taxes to be paid?

The complete cleaning out and "cyanide fumigation" of morale and initiative killing WPA or anything that smells like it?

Repeal of laws which take freedom from the laboring man or any common man and make him a helpless slave of a labor or other dictator?

A cessation of "superman" attempts from Washington to level down the abilities and the incomes of all citizens to a government prescribed level,—the placing of a premium upon indolence,—the economy of scarcity,—the taking in taxes of your extra income produced by hard work, sacrifice and risk and giving it to the "featherbedder"— the fellow who believes more in "plums" than in work?

Would we welcome it? I believe most thinking people would. We want *liberty* and would elect any honest representative who had gumption enough to stand on such a program.

Geo. W. Kable

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★ WARTIME STRATEGY ON THE FARM ★

# He uses his brain instead of his brawn

ED H. FOREST is a born genius for finding *new ways to put electricity to work* on his cattle-feeding farm at Wauseon, Ohio.

Farmer Forest operates his 55-acre farm *without any hired help* . . . other than the *wired help* he gets from the high lines.

But let Mr. Forest tell his story in his own words. You, too, may gain some helpful information by reading what Ed Forest has to say.

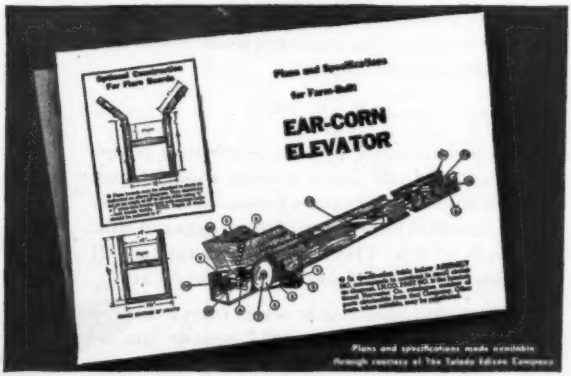
**"I'M GETTING ALONG IN YEARS,"** says Mr. Forest, "and I use electric power wherever I can to save time and labor. Take this corn-unloading conveyor, for instance, which I built in my farm workshop. All I do is feed the ear corn into the conveyor . . . and the one-sixth H.P. electric motor does all the hard unloading work."

**"TO GET THE CORN INTO THE CRIB,** I use my farm-built grain elevator. The 1-H.P. motor elevates the corn as fast as it comes out of the wagon. It used to take me about 60 minutes to scoop the corn up into the crib. Now I can unload and store 100 bushels of corn in 12 minutes . . . at a cost of *less than a penny for electric power.*"

**"I LIFT WATER 50 FEET** with my deep well pump which I fashioned out of spare parts. And I run it with a *one-sixth H.P. electric motor.* The secret of using such a small motor for deep-well pumping is the *spring counterbalance* which carries the entire weight of the sucker rod and piston. This contraption is my own idea!"

## YOU CAN BUILD THIS GRAIN ELEVATOR!

We shall be glad to send you *complete plans and specifications* for building Mr. Forest's farm-built elevator . . . together with "Farm Motors" booklet which gives helpful information on the selection, care, and use of farm motors. *Mail coupon today!* Westinghouse Electric & Manufacturing Company, Pittsburgh 30, Pennsylvania.

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Rural Electrification, 306 Fourth Avenue, Box 1017,
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Please send me *free* Plans and Specifications for constructing farm-built grain elevator and *free* "Farm Motors" book.

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*"When I think of the hours I've spent pumping water by hand when I could have been doing something more profitable—the tons of water I've lugged into the house; those hours of pumping on bitter cold days when my hands almost froze to the pump handle and I had to hack holes in the ice for the cattle; those sweltering summer days when I spent long hours pumping after haying all day—all this has convinced me that an electric water system will be my first postwar project."*

* * *

Many farmers spend a third of their time pumping water and still fail to provide enough water for all livestock. On some farms, water systems have increased production of meat, eggs and milk as much as 25%. That's why a water system will quickly pay for itself and return good profits.

Whether you obtain your water from a deep or shallow well, regardless of the capacity you require, there's a Goulds water system to fit your need—*Insist* on a Goulds!

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ELECTRICITY on the FARM

**ELECTRICITY: *Versatile Energy for Many Farm Uses***

Power—Light—Heat—Electronics. Easily adapted, started, controlled: automatic. Labor doer and saver, money maker, and product improver and increaser. Used intelligently, it changes the whole aspect of farm life and production.

**FEBRUARY 1944**

# HOW ELECTRICITY HELPED ME MOST IN 1943

**Letters Submitted in Our War Production Contest Announced in November**

ELECTRICITY was a good helper in the 1943 food production program. It did "pinch hitting" for men in the service, permitted the expansion of normal farming operations, gave farm women more chance to help in production and helped smooth the way for a lot of farm folks who had plenty of difficulties last year. We are pleased to print some of the best of the letters sent in by our farm readers. More will be printed later.

## Electricity Doubles Milk Production

"I operate a 303 acre dairy farm on shares. Have one hired man, and no other help. If it were not for electricity, I could not farm this place. Good labor is practically impossible to procure. My milking machine saves me one man, at least, with a money saving of $960 per year without counting board. I estimate that we milk twice as many cows with the machine as we would attempt by hand. This year my share of the milk check totaled $2,225.26. Without my machine and extra cows, it would be half that. Then there were all those extra calves we sold and raised.

"The electric lights, themselves, have enabled me to save several valuable cows at calving time when you need to see what you are doing. Then, too, because it is so convenient to turn on the switch and flood the barn with light, I make frequent trips to watch ailing animals. It is hard to estimate the value of those trips.

"In 1943 we installed an electric pump. No more sour milk, even in the hottest weather. No more depending on a whimsical wind to water our cattle.

"I could name other time and labor-saving devices I use, but these facts are obvious: 1st. By running to capacity everything on the farm, I help the war effort. 2nd. I get along without an extra man or two who can be used elsewhere. 3rd. I am able to take those good American dollars electricity helped me make in 1943 and invest them in our liberty and future,—U. S. War Bonds."

JOE JENSEN,
Florence Station, Illinois.

## Woman Milks the Cows. Husband Works in War Plant

"Electricity surely has saved hours of labor on our farm. Before we had electricity installed and purchased our milking machine, it took myself, my husband and a hired man two hours to milk 25 cows. This past year my husband has worked in a war plant and farmed 70 acres in his spare time, while I milked the cows with the machine in half the time it formerly took the three of us by hand. And that gave the hired man to another farmer who needed him very badly.

"With the help of a washing machine, iron, two-burner hotplate, sweeper and refrigerator, I managed to do all the housework for a family of six. Also raised a large garden and canned all the surplus vegetables with the help of the hot-plate.

"Electricity sure is a wonderful thing for us farmers. When peace comes to this old world again, I hope everyone can have labor-saving equipment."

MRS. BLANCHE GIBSON,
R 4, Streator, Illinois.

**"A family who have an electric washing machine listening to those 'can't get my laundry back' jokes on the radio."**

## Chopped Hay and Cleaned Seed

"On my 120 acre livestock, dairy and hog farm, a milking machine saved a year-around hired hand in 1943. What's more, a second-hand hammer-mill, feed mixer and hay chopper replaced a part-time hired man and relieved me of much hard labor. I chopped my alfalfa electrically instead of baling it as I formerly did when help was plentiful. It speeds up feeding and gives far better feeding results. So far this year I have also made $80.50 grinding feed for three neighbors whose help is short due to the war.

"With the aid of a No. 2 seed cleaner, I was able to harvest and reclean 19,716 pounds of alfalfa seed from 26 acres, which I sold at my farm for 20c per pound or $139 per acre. From another five acre plot seeded to barley oats and

vetch, I got 1600 pounds of recleaned vetch seed which I sold for 12c per pound or $38 per acre. The electricity for cleaning cost 3c per 100 pounds of seeds."

LAWRENCE WILLIAMS,
R 2, Midlothian, Texas.

## Taught School, Raised Garden and Poultry and Canned Food With Aid of Electricity

"With electricity sharing honors this year I was able to do my laundry and house work, fill my pantry with home-canned products, raise an ample supply of poultry for home use with some for market, help with the Victory garden and teach in my community school for several months. Electrical equipment, such as my stove, Frigidaire, iron, washer, vacuum cleaner, pump and electric brooder were the labor and time savers responsible for the accomplishment."

MRS. J. M. DENSON,
Helena, Alabama.

## Electricity Helped Clear Land and Earn $722

"With two boys in the armed forces, only Buddy and myself remain on the farm. Early in 1943 I bought a second-hand 20-inch saw for $105 at a farm auction sale. It is mounted on a two-wheel trailer and operated by a repulsion-induction motor. It has enabled us to make a cash return of $116.50 an acre from second growth timber land.

"In order to increase farm production I needed more corn land, so Buddy and I cleared 6.2 acres of second growth timber. There was a good local market for small stuff in this territory. (Other territories, too. Ed.)

"The following was cut and sawed from the 6.2 acres cleared:

| | |
|---|---|
| 35,500 ft sawlogs ..... | $532.50 |
| 62 cross ties ..... | 18.60 |
| 250 ft fence posts..... | 20.00 |
| 5 cords pulpwood .... | 16.25 |
| 3 cords gum bolts ... | 16.50 |
| 5 cords oak bolts..... | 40.00 |
| 6 cords 16 inch wood. | 36.00 |
| 20 cords 24 inch wood. | 120.00 |
| Total..... | $799.85 |

"We did all the work ourselves during spare time from other farm work, so there was no actual outlay of cash, but we credited ourselves with $12.50 per acre for cutting. Subtracting this $77.50 left us a balance of $722.35. We would not have sawed it without the electric saw."

A. C. BEAVER,
R 2, Midlothian, Texas.

**DID ELECTRICITY HELP ME IN 1943?**

Well, I'm not as young as I used to be;
And our little Boy Blue, that minded the sheep,"
He's in the army driving a jeep.
The electric milker "pails" his cows and mine,
I couldn't get along without the high line.
Electricity helps us from plowing to sewing,
Without electricity, we just couldn't keep going.

MRS. PAUL HOWENSTINE,
R 1, Huntington, Ind.

## Roaster Helps Harvest Crops

"I would not have been able to haul wheat from our combine which enabled us to get it in before it rained if I had not had an electric roaster to get our meals and bake for us. It saved a hired man or a hired girl for someone else. And I could not have driven the tractor with our four-wheeled trailer in the corn field this fall if I had not had the roaster to get the meals for us and the hired man.

"Of course our refrigerator kept our week's supply of meat from our town locker and made our ice cream. I can also get my laundry work done in half the time since I have my electric equipment."

MRS. E. L. JOHNSON,
RFD 4, Waco, Nebraska.

**COVER PICTURE**

**The cover picture shows Leonard B. Geyer, rural service representative of the Rochester (N. Y.) Gas and Electric Co. with a group of his 4-H electric club boys studying different types of fractional horsepower motors and their use in the farm shop. The boys in the picture from left to right, standing are: Richard Outhouse, Dwitt Case, Everett Day, Glen Case and Charles Outhouse. Seated: John Purdy.**

**Richard Outhouse is the 1943 New York State winner in the Westinghouse 4-H Rural Electrification Contest.**

## PRIZE WINNERS IN WAR PRODUCTION CONTEST

**First Prize—$25 War Bond**
JOE JENSEN, Florence Station, Illinois

**Second Prize—$5 in War Stamps**
MRS. BLANCHE GIBSON, R 4, Streator, Illinois

**Winners of $3 Each in War Stamps**
Lawrence Williams, R 2, Midlothian, Texas
Mrs. J. M. Denson, Helena, Alabama
A. C. Beaver, R 2, Midlothian, Texas
Mrs. E. L. Johnson, RFD 4, Waco, Nebraska.
Mrs. Paul Howenstine, R 1, Huntington, Indiana.

**Other Letters Being Paid for and Held for Later Publication**
Leon Ensz, Conway, Kansas
Miss Susan L. Brown, RD 1, Walden, N. Y.
Elmer L. Johnson, RFD 4, Waco, Nebraska
Mrs. Mae DeHaven, RD 4, Huntington, Indiana
W. M. Abbott, RFD 1, Morrison, Illinois
J. E. Underwood, R 1, Box 203, Warrior, Alabama
Mrs. June L. Engle, RR 3, Bluffton, Indiana
Mrs. Ben Martin, R 2, Graham, North Carolina
Mrs. Mary Owen, Sedley, Virginia
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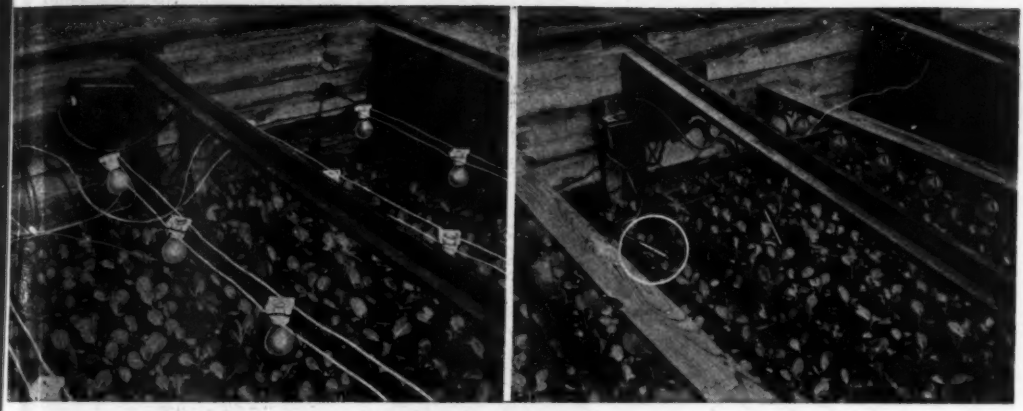
Mrs. Katie E. Nungezer, R 1, Box 266, James Island, Charleston, S. C.
Mrs. N. N. Dryden, Eagleville, Tenn.
A. J. Roberts, R 1, Heflin, Alabama

## Feed Saving Device

Dwight Ballard of Eaton county, Michigan has found that a strip of 1-inch mesh poultry netting placed over the mash inside his poultry feed hoppers prevents hens from throwing out the feed. The wire forces the birds to peck straight down.

—Capper's Farmer.



**Left:** This is a view of a 6' x 6', two sash hotbed with 16-25 watt lamps used as heaters. The lamps are supported on the electric wires with the end sockets fastened to the wall with a piece of soft wire. The outside rows of lamps are 9" from the sides of the frame and all other lamps are 18" apart. **Right:** In this bed the lamp sockets are attached to strips of 1" boards. The spacing of the lamps and strips should be as in the other bed, i.e., 18" apart. Note the placing of the thermostat switch with the bulb in the circle just on the soil surface.

# Electric Hotbeds Best for Starting Plants

**Electric Heat Has Distinct Advantages. Instructions for Building Beds. 25 Watt Lamps Make Good Heaters Where Hotbed Cable Is Not Available**

By **JOHN A. SCHALLER**[1] and **A. B. STRAND**[2]

THE wide acceptance and good performance of electric hotbeds in the past 10 to 15 years has clearly indicated their superiority over manure-heated beds for several reasons: (1) Manure is not always readily available; (2) Germination is quicker; (3) Better quality plants are produced; (4) Heat is automatic and is available at a snap of a switch; (5) Less labor is required for making and caring for the hotbed; (6) Plants may be forced or retarded to a limited extent to suit transplanting requirements; and (7) Any temperature range can be selected and maintained.

The heating elements for hotbeds may be lead covered nichrome heating cable, special rubber covered heating cable or ordinary 25 watt electric lamps. If one has heating cable, it should be used carefully as only limited quantities are available during the war. Lamps as hotbed heaters are less commonly used but have given good results in tests.

### *General Instructions for Hotbeds*

Hotbeds should be located on the south side of some form of windbreak to provide maximum sunshine and protection from the north winds. They should be located so that good drainage can be secured and should be near a power supply. At no time should trees or buildings shade the bed.

### *Cinders for Insulation and Drainage*

In the south the use of cinder insulation offers only a slight saving in operating cost. In colder climates it may be advisable to use a 6" to 8" layer of screened cinders underneath the hotbed soil. If used, they should be leveled and covered with burlap to prevent soil filtering down and destroying their insulating value. Earth or sand should be placed between the cinders and lead cable as some cinders have a very corrosive effect on lead.

### *Building Frames*

Hotbed frames can be of wood construction and for permanently located beds, concrete, bricks, or cinder blocks may be desirable. The accompanying illustration shows one method of building wooden frames of 2" material. The bottom of the hotbed frame should be level and the back wall should be 6" higher than the front wall.

### *Hotbed Covering*

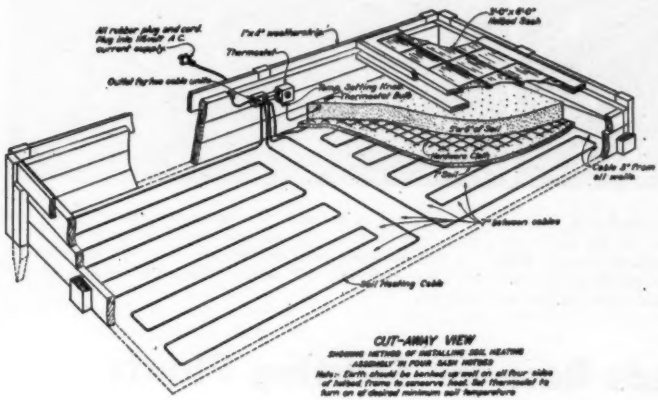
Standard glazed sash or glass substitutes can be used. Glass is preferred over other wartime materials, especially for winter operation. An appreciable saving in power consumption can be effected by covering sashes with straw mats.

### *Automatic Temperature Control*

Soil-heating thermostats with bulb to be placed in the soil are

[1]Associate Agricultural Engineer, Agricultural Engineering Division, Tennessee Valley Authority.
[2]Associate Horticulturist, University of Tennessee Agricultural Experiment Station.

most widely used. An air type thermostat may also be used so long as the thermostat is regulated to maintain desirable soil temperatures. While a thermostat is not absolutely necessary if hotbed temperatures are carefully watched, it is strongly recommended, because it will save electricity and labor and avoid overheating or chilling.



CUT-AWAY VIEW
SHOWING METHOD OF INSTALLING SOIL HEATING ASSEMBLY IN FOUR SASH HOTBED

### Temperature Requirments Vary

Cabbage, broccoli, cauliflower, head lettuce, and similar plants do best when the soil temperature is 50° to 70° F. This group of cool weather loving plants will stand lower temperatures for a short period but are likely to go to seed after transplanted to the field if they have been seriously checked in growth by prolonged low soil temperature in the plant bed.

Tomatoes, eggplants, peppers, and other similar vegetables that are commonly transplanted, require a somewhat higher temperature: 65° to 75° F. This group will not endure low soil temperatures and slight frost. Careful attention to the adjustment of the environment about the young plant requires experience. The aim should be to produce a stocky, sturdy plant that is not spindly, leggy, or too succulent, nor one that has been held back too long to await desirable field conditions.

### Hotbeds with Soil Heating Cable

A method of installing soil-heating cable in a four-sash hotbed is shown in the accompanying drawing. If cinders are used, the burlap over the cinders should be covered with about 2 inches of sand or loose soil. For a two-sash bed only one 60 ft cable is used. In laying lead-covered cable, care must be taken to prevent too abrupt bending or the outer lead casing may be broken. Where rubber-covered cable is used it is a good plan to use nails or sticks to hold the cable in place at the bends while it is being laid. The lead-covered cable must be cut in 60-foot lengths for 115-volt operation and in 120-foot lengths for 230-volt operation. One type of rubber-covered cable requires a 120 foot length for 115-volt operation and 240 foot length for 230-volt operation. Note the manufacturer's rating on the cable so that proper wattage can be secured.

### Lamp-Heated Hotbeds

In 1941 the University of Tennesse Agricultural Experiment Station and the Agricultural Engineering Development Division, TVA, cooperated on a series of studies to determine the feasibility of using light bulbs to heat hotbeds and to compare them with lead-covered soil-heating cables.

In the lamp-heated beds, ordinary 25-watt Mazda B inside frosted bulbs were used. With both the lead cable and the lamp method of heating, good sturdy plants were produced and no difference in field development was noticed. Due to the added stimulation from the lights, the lamp-heated beds had to be watched more closely to prevent too rapid forcing of the plants. Aside from this, our studies showed that under Tennessee conditions light bulbs had the advantages of lower cost per bed for installation, lower kilowatt-hour consumption, ease of installation and removal for seeding or working in the bed, little danger of mechanical injury and low replacement cost if a lamp burned out. Of importance, also, is the fact that with soil heating cable which must be cut into 60 or 120 foot lengths for proper operation, the beds should be in units of 36 square feet, while lamps may be used as heaters in any size bed.

### Lamp Spacing for Uniform Heating

The most desirable arrangement of light bulbs was found to be in rows on 18 inch centers in both directions with the first rows of lamps 9 inches from the hotbed frame. The porcelain sockets may be attached to 1" x 3" strips of board or supported by the No. 14 wires which supply the current. The two methods are shown in the illustrations.

Lamps should be of the 25 watt size. Larger lamps are of the gas-filled type and may cause hot spots in the bed. For southern conditions the lamps should be at least 10 inches above the soil. In colder climates this distance may have to be increased as the lights will be on more of the growing period. It may be necessary also to raise the lamps as the plants grow.

In the Tennessee tests the temperature of the top 2 or 3 inches of soil ranged from 1° to 3° lower than the air temperature in the bed. It is a good plan to turn on the lamps 2 or 3 days before planting the bed.

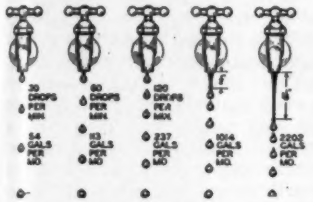

BONDS BUY

*harm* equipment for Hitler today
*farm* equipment for *you* tomorrow

# Simple Plumbing Repairs

By M. M. Johns
Extension Agricultural Engineer
Univ. of Tennessee, Knoxville, Tenn.

IT is patriotic as well as practical to keep your plumbing in good repair. It will save water—save wear and tear on the water system—save electricity and the fuel it takes to make it—and save staining of enamel on the fixtures.




A leaking hot water faucet will also waste considerable heat. With the ordinary electric water heater set to heat water to 140° F., an average of 1 kw-hr is consumed for every 3½ to 4 gallons of water heated. At 1 kw-hr for every 4 gallons, the electricity to heat the water wasted at the rates shown in the diagram above would be:

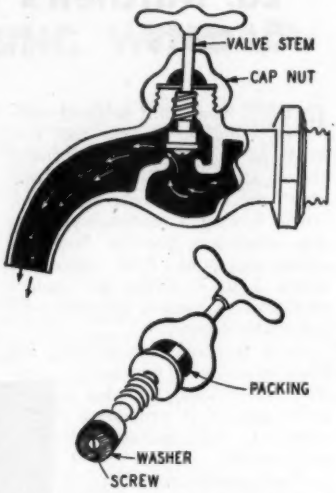
| | Kw-hrs per Mo. |
|---|---|
| Faucet leaking 30 drops per min.. | 13.5 |
| Faucet leaking 60 drops per min.. | 28.2 |
| Faucet leaking 120 drops per min. | 59.2 |
| Faucet leaking ⅛" solid stream.. | 253.5 |
| Faucet leaking 1½" solid stream.. | 550.5 |

Faucet washers of assorted sizes can be purchased at most hardware stores for ten cents a box. They are either flat or beveled. The beveled type is most commonly used in replacing old faucet washers.

Be sure to use the correct size washer.

### *Repair of Compression Type Faucet*

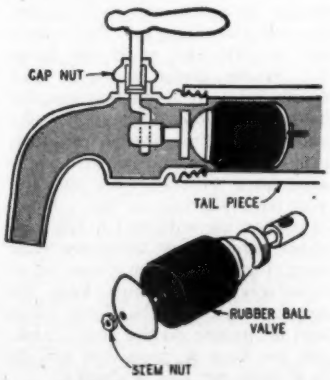
1. Determine where leak is (spout or stem).
2. Shut off water to faucet.
3. Unscrew cap nut.
4. Unscrew valve stem.
   If leak is around stem
5. Remove old packing and replace with new.
   If leak is at spout
6. Remove washer screw
7. Insert new washer and reassemble.




If faucet still leaks at spout it is due to a rough or worn valve seat. New faucets of the chrome or nickel finish are impossible to purchase at present. Therefore the valve seat will need to be recut or renewed. Remove the entire faucet and take to a plumber for recutting or renewing valve seat.

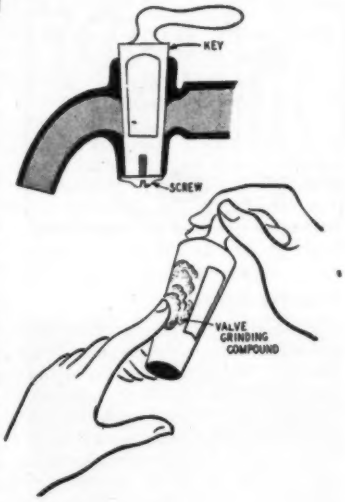
### *Repair of Fuller Type Faucet*

1. Shut off water to faucet.
2. Unscrew the faucet from tailpiece.
3. Unscrew stem nut.
4. Replace rubber ball valve and reassemble.




### *Repair of Ground Key Type Faucet*

1. Shut off water to faucet.
2. Remove large screw at bottom of faucet.
3. Remove key from faucet body and place valve grinding compound over surface.
   Insert key back in faucet body and turn back and forth until smooth surface is obtained.
4. Clean key thoroughly — oil — and reassemble.




### *Repair of Water Closet*

If water runs out of overflow pipe:

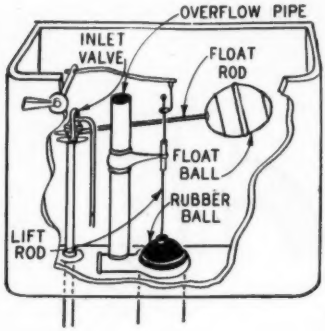
1. Cause: Leaky or water-logged float ball.
   Remedy: Remove all water from copper float ball and solder leak or replace with new float ball.
2. Cause: Float ball rod bent.
   Remedy: Bend float ball rod downward.
3. Cause: Faulty inlet valve.
   Remedy: (a) Purchase set of water closet washers and valves.
   (b) Shut off water to closet.
   (c) Remove float ball and rod.
   (d) Remove thumb screws

and lift out plunger and inlet valve.

(e) Replace soft rubber washer at bottom of outlet valve and reassemble.

If water leaks around rubber ball:

1. Cause: Lift rod bent or binding in guides.
   Remedy: Straighten lift rod and be sure rod is working freely in center of outlet hole.
2. Cause: Rubber ball worn.
   Remedy: Purchase new rubber ball and replace by unscrewing old ball from lift rod.



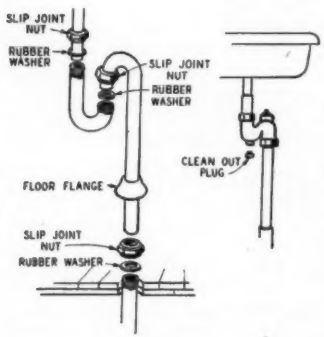

***Cleaning Drains***

A suction plunger is often used to clean sluggish drains from kitchen sinks, lavatories, toilets and bath tubs. Place over the clogged drain and work up and down with a pumping motion.

A household commercial chemical can be used in drains occasionally to cut grease and help keep them clean. Follow directions on can.

The water trap on kitchen sink and lavatory drains can be cleaned by removing the drain plug on some types or taking the trap apart as shown below. Be sure to purchase three new rubber washers for drain pipe before disconnecting the trap for cleaning. Sink drains are usually larger than lavatory drains, so in purchasing the drain pipe washers specify where they are to be used.

REMEMBER: It is much easier and cheaper to drain water systems and pipe in extreme cold weather than it is to thaw them out or make repairs.




# Ed. Mitchell's Chick Raisin' Secrets

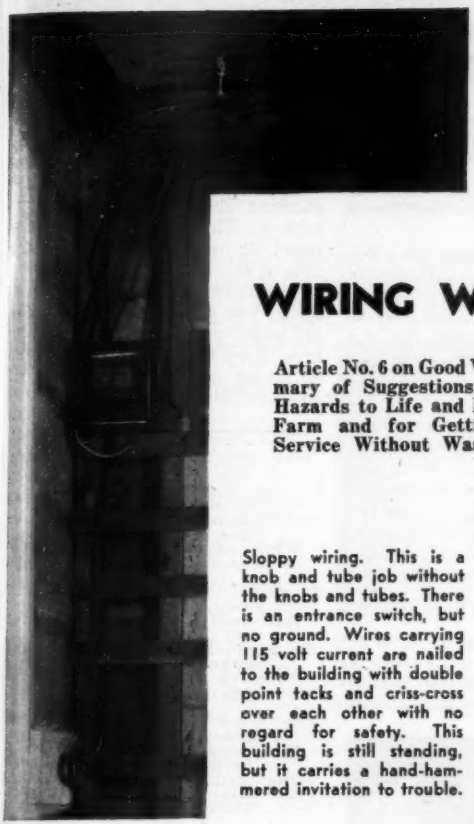
**As confided by Mr. Mitchell to his WGY radio audience.**

FIRST, you want a good wife or daughter to do the real work of looking after the baby chicks after you have everything organized. As executive you will see to having a reasonably warm dry, draft-free brooder house of some sort with floor space for about 5 to 7 chicks per square foot, and an electric brooder with automatic control.

It is a good plan to run the brooder a day or two before the chicks come to make sure it is properly adjusted and operating as it should.

This, gentlemen, is the real secret of success with baby chicks! Be sure to have your wife and daughters around when you bring the chicks home from the post office. They are very cute and appealing at that stage of the game and the women fall for these poor little orphans in a big way. Work up their sympathy and emotions in a tactful way with a few well chosen remarks and find urgent business elsewhere and the women will do the rest until the birds get to be about four or five weeks old. At about that age the baby chicks lose their good looks and their infant appeal and look pretty scraggly, and you will probably have to take over the job you have shirked so far. However, barring rats and a few diseases, which may not come your way, the work from there on is relatively simple; just keep the hoppers full and the floors clean and let nature do the rest. Chickens are born to grow and will do it if they get half a chance.

Until the last few years, few people tried to start chicks this early in the season without elaborate equipment and steam heat, but one smarter than the rest, observed that chicks did very well in cold weather if they had a mother hen or a good hover where they could dash in and get warm every few minutes. That led to experiments with electric brooders in a cold house and they discovered that chicks raised under such rigorous conditions feathered out earlier and seemed more vigorous and thrifty than others that were brought up in a heated house. The use of the electric brooder simplified the matter of keeping the heat just right, and the ventilation good. Any of you who want to raise a few chickens, or a whole lot of them, may go ahead at any time of the year with reasonable assurance of success. The early season birds, you know, bring in the early fall eggs when prices are highest, and they also seem to be more vigorous and disease free.



Sloppy wiring. This is a knob and tube job without the knobs and tubes. There is an entrance switch, but no ground. Wires carrying 115 volt current are nailed to the building with double point tacks and criss-cross over each other with no regard for safety. This building is still standing, but it carries a hand-hammered invitation to trouble.

File for reference

# WIRING WIND-UP

**Article No. 6 on Good Wiring. A Summary of Suggestions on Preventing Hazards to Life and Property on the Farm and for Getting Good Safe Service Without Waste of Current.**

THE series of articles we have just published told of many poor wiring installations on farms. Most of the loss of property and of current was due to thoughtlessness or a lack of understanding of the necessity for adequate wire sizes, good grounds and safety precautions. Such neglect is costly and distressing. It is after all, a sensible investment to have good, adequate wiring. The National Electric Code gives rules for safety. *Engineering judgement must be used in designing for adequacy to supply your requirements.*

### Good Wireman Important

Have your wiring laid out by a man who understands his business. Have it inspected if possible by a qualified wiring inspector. Inspection is for your own protection. Inspection applies to either new wiring, or old wiring about which there is any doubt.

Avoid the unknown wireman or contractor who promises you just as good a job at less cost. Those cheap "skimp" jobs are usually, in the end, most costly.

Here are a few safety pointers and recommendations based on experiences with wiring on farms:

**1.** ELECTRICITY ON THE FARM recommends rat-resistant non-metallic sheath wiring as its first choice for farm wiring, particularly for all farm buildings other than the house. Although conduit and BX type wiring is approved by the Code, we believe there is less danger of stray currents and more permanency in wire without a metal sheath. A metallic sheathed cable or conduit may carry hazardous stray currents and hold condensation, and will rust out in damp places.

**2.** Much more attention should be given to effective grounding of electric systems, lightning rods, water pipes, metal stanchions, metal roofs, windmill towers and ordinary (non-electric) wire fences. A connection to ground which offers considerable resistance to the passage of electric current is a real hazard in that it affords a false sense of security. The fact that a pipe is driven into the ground does not insure having an effective electric "ground." An electric "ground" should offer less resistance to the passage of current that a cow's body when she is standing on a urine soaked barn floor. Electricity follows the path of least resistance. Provide paths over which it is easier for stray currents and lightning to get to ground than through the cow's body and it will usually go that way. Lightning rods and electric wiring systems should be separately grounded.

**3.** Take precautions to keep all current carrying wires, whether in non-metallic or in metal sheaths, from contact with pipes, stanchions, pumps, milking machines, and other metal around buildings.

**4.** Avoid the use of extension cords and drop cords in farm buildings wherever possible, and especially in damp places. Where they must be used, use rubber covered cords; never twisted pairs of extension wire. Keep these cords off from nails and away from pipes, stanchions, etc. Unless completely covered with insulating material, metal lamp sockets should not be used on extension cords or drop cords within reach of pipes, machinery or other

This is a good barn entrance made with non-metallic sheath cable, properly grounded and with convenient switches. The cable, being in an insulated sheath may be stapled directly to the wall.

grounded metal or wet floors. Use porcelain or composition sockets.

**5.** Do not keep adding wire or equipment to a circuit which is not designed for it. Each circuit has a limited capacity and any loading beyond that capacity will be a definite fire hazard. When additional equipment is to be added or an extension made, you will nearly always need *larger wires also* to crary the electricity from the entrance switch, or even from the transformer. Overloading circuits is one of the greatest causes of electrical fires and of unsatisfactory operation of good equipment.

**6.** Do not use oversize fuses in circuits (15 amp. in lighting circuits) and under no circumstances put pennies or other metal behind them. That's like having a fire engine chained to the fire house. Fuses are placed in circuits for your protection. Do not jeopardize that protection.

**7.** Use overload protection on all motors. It will save the motor from overloads, save money for replacing burned out motors, and sometimes prevent fires. Circuit fuses are not installed to protect motors. They protect the circuit wires.

**8.** Avoid loose connections in wires and switches. They may cause arcing, lamp flicker and radio interference. Have wiring inspected periodically for loose connections.

**9.** Do not use lamps too close to straw or other inflammable materials in brooders, or barns, or permit lamps to become covered with dust and cobwebs. Do not permit fans in brooders to become clogged with dust and fuzz. Clean once a week.

**10.** We commend the practice of some installers of inserting a few inches of rubber hose as a non-conducting link in the vacuum line between the milking machine vacuum pump and pipes attached to metal stanchions as an extra precaution against possible short circuits.

**11.** Be sure that all wire and all joints in wiring used underground or in contact with the ground is waterproof and perfectly insulated. Keep overhead wiring from rubbing against trees or structures. This is to prevent current leakage and short circuits which may waste current and be dangerous to life and property.

**12.** Do not be guilty of having sloppy, unsafe wiring because someone else has, and "got by" with it. There is always a first time! It is cheaper to be safe than sorry.

Electricity is one of the safest things you can have on the farm. It helps prevent accidents and fires. Keep it safe and satisfactory by taking no chances on bad, inadequate wiring.

**The six national winners** in the 1943 4-H Club rural electrification contest are shown as they received their prizes from G. Edward Pendray, assistant to the president, Westinghouse Electric & Manufacturing Company. In the photograph from left to right, the winners are Herbert Rice, Jr., Alabama; Monroe Arne, South Dakota; Leon Bernsen, Texas; Glenn Eisenbrandt, Illinois; Marvin E. Heft, Jr., Michigan, and Lawrence M. Kirk, Colorado.

For displaying unusual ability in learning the workings of electricity and putting it to work, these six boys received free trips to the 22nd National 4-H Congress at Chicago and college scholarship provided by the Westinghouse Electric & Manufacturing Company.

Named as alternate national winners to take advantage of the scholarships in the event any of the six winners did not use them were: Alden S. Hopkins, Jr., Sussex County, Delaware; Dale Burtner, Portland County, Oregon; Carl Woodard, Nash County, North Carolina; Richard P. Outhouse, Ontario County, New York; Gordon B. Hanson, Griggs County, North Dakota; Michael E. King, Anne Arundel County, Maryland, and Ralph Mortimore, Otoe County, Nebraska.

## Winter

I always say I'll never stay
Another winter in these hills,
To stamp and freeze and cut down trees
While snow piles high on window sills.

I shovel snow; back-breaking, slow,
Half-dead I come inside, and then,
All night it snows and nothing shows
To mark the place where paths have been.

The wood I bring—I long for Spring—
The wind shrieks wild outside the door;
I rant and rave that I'm a slave
To that old stove; it answers "More."

Another year, — now just you hear—
I'll sojourn in some sunny clime
Where life is soft, with birds aloft
And flowers blooming all the time.

. . .

And so I dream, and yet I seem
To know I'll never leave the hill.
T'would be so queer with no one here;
No friendly smoke, all white and still;

No birds to light on suet white,
No cheery, happy Chickadee—
I quite forget, the while I fret,
Just what this haven means to me.

Had I not felt the stinging pelt
Of snow and ice on upturned face
Could I then know that warming glow
That comes when Springtime takes its place?

Had I not known the fields snow-blown
Could I then know the recurring thrill
Of robin's song—of days grown long—
Of Spring unfolding on our hill?

RUBY M. DROGSETH,
Woodstock, N. Y.

★ *Buy War Bonds* ★

# Hasn't Hollered "Uncle"

**DeBolt Farm Through Good Management, Extra Work and Electricity Has Greatly Increased War Production. Farm Is Organized by Departments.**

**By HOWARD CLAPPER**

FROM time to time we've all noticed in our papers or heard over the radio how the "Whack Hitler" bomber plant has exceeded production schedules or how ship launchings have increased over the same period one year ago and so on.

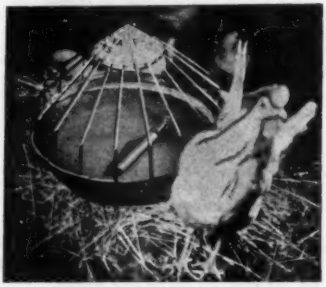
Now maybe not so much glamorized but every bit as important is the production of the "war plants" into which our nation's farms have been converted, and we'd like to hoist an "E for Excellence" banner over the "war plant" operated by Paul DeBolt, of Wayne Township, Knox County, Ohio.

The farm consists of 200 acres of fertile soil, farm buildings, stock, machinery and equipment. Before the war the farm was operated efficiently and well and some folks might have been satisfied with just maintaining production, but not the DeBolts. No, sir!

Paul, the father (officially known as general manager in charge of the poultry division) has this year gone into winter quarters with 1,200 laying hens. This is a 33 per cent increase over the 900 layers carried in previous years. Four electric brooders worked a double shift last spring in starting and raising these 1,200 layers. (1,000 sexed pullets and 1,000 mixed chicks were raised on the farm.)

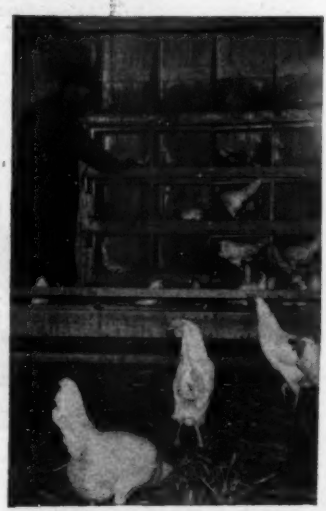
### *Vice-President in Charge*

We'll call son Earl, the first vice-president in charge of dairy operations. Through a process of modernization and increased use of electricity his department not only shows the largest percentage of increase but also shows a saving in total man-hours of labor. With a new electric milker, milk cooler and dairy sterilizer, Earl is now handling 20 cows and doing all the work himself. In pre-war days three men went to the dairy barn to milk 12 cows. Earl's departmental increase amounts to 66 per cent and in addition, with his new electrical equipment and new milk house, he's producing a higher quality, better priced milk.



**One of the little things that improves management and profits and saves labor. A Thermostatically controlled 155 watt water warmer.**

Then there's the hired hand in charge of the "pork plant." He's responsible now for 15 brood sows and their offspring, a 15 per cent increase over pre-war pork production.



**Paul DeBolt in the hen department on the DeBolt Farm.**

Three men handled this farm before the war and three men are handling it now. The hired hand replaced a son called to his country's service. The increase in food production can be attributed to good organization, a willingness to work longer hours and, in the dairy barn especially, increased use of electricity has been a real factor in boosting production.

During the last six months the DeBolts used 2196 kilowatt hours for a total bill of $65.11. In the same period one year ago 950 kilowatts costing $39.19 were consumed. It is interesting to note that while usage of electricity was increased by 131 per cent that the total bill, due to buying more current in the lower brackets, increased only 66 per cent.

Typical of all the farm folks of the nation who refuse to "holler uncle" when the going gets tough, the DeBolts are producing with every tool at their command and over their barnyard, figuratively at least, flys an "E for Excellence" banner.

## Scrap

Rolling mills advise us that there is a most urgent need for scrap to mix with new steel for war purposes. The scrap is essential. It is not a substitute for, but must be a part of new steel. Heavy scrap, such as farm machinery, is best for the purpose.

In the interest of Victory, they ask if you will please survey your requirements and see if there is not something that you can now discard and put into the scrap collection. More new machinery will be available this year, and we are getting closer to the end of the war. Perhaps some of the old machines which you have been holding for an emergency can now be spared.

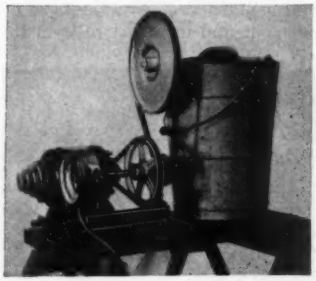
*Basic English*, which uses 846 of the more common English words, is easily learned by non-English speaking people; it includes 600 nouns, 150 adjectives, 18 verbs, and 78 pronouns, adverbs and prepositions.

# Portable Motor Speed Changer

By ROY A. ROBERTSON*

STANDARD fractional horsepower motors run at 1750 rpm. Many pieces of equipment which these small motors will operate such as sausage grinders, ice-cream freezers, seed cleaners, churns, feed mixers, tool grinders, bench saws, etc., should be operated at speeds of from 60 rpm to 3000 rpm. Frequently it is difficult to operate these machines at the best speeds without having a speed changing device for the motor. The one that is described below has been found very useful and satisfactory, and is not too expensive. The shaft, pulleys and belts may be obtained from stores handling home shop equipment or from mail order houses.

It is best to start with a motor having a shaft which extends at each end of the motor so that pulleys can be placed on each end. The motor and jackshaft are bolted down rigidly to a 1-inch hardwood board just large enough to accommodate the motor and shaft with a short V-belt. The motor is equipped with a 2-inch V pulley and the jack-shaft with a 7-inch V pulley. This will give the jack-shaft a speed of about 500 rpm. The jack-shaft is made short and set far enough to one side of the board so a belt direct from the cone pulley on the motor to a machine will clear the shaft.

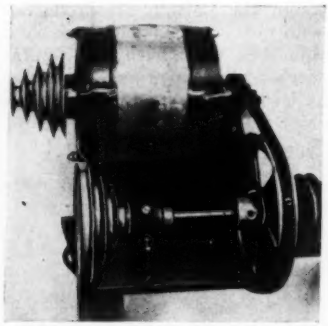


A vertical belt drive. In order to keep the belt tight, the unit is supported on the end rail under the motor.

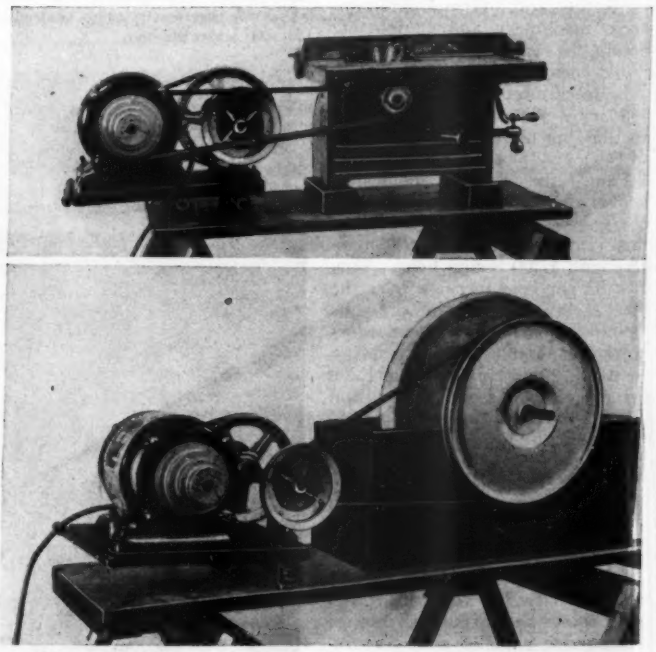
With a 4-step cone pulley on the motor shaft and similar pulleys on the jack-shaft you will have eight different speeds, four from the motor direct and four from either end of the jack-shaft.

By using a standard 2"-2⅝"-3⅜"-4" cone pulley on the motor and a 2"-3"-4"-5" cone pulley on the jack-shaft, one will get belt speeds in feet per minute on the jack-shaft of 262 ft, 394 ft, 526 ft 658 ft, and from the motor 910 ft, 1200 ft, 1540 ft, and 1820 ft. The steps are fairly continuous in their advance.

In order to get proper belt tension when using either the motor or the jack-shaft, it is necessary to have three rails made of ½-inch pipe or broomstick under the hardwood board. The rails extend 1½ inches beyond the edges of the board. One is at the extreme motor end for use when pulling a



An end view of the speed changer showing how the driven pulley on the jack-shaft is placed between the bearings, and the cone pulley is in far enough to give clearance for the belt when driving from the cone pulley on the motor shaft.



**Upper:** This small table saw runs at high speed. It is driven direct from the cone pulley on the motor shaft. The three rails are also shown. When driving direct from the motor, the unit is supported on the center rail as shown. **Lower:** Slow speed grindstone driven from the jack-shaft. The support rail under the jack-shaft is the one used, the weight of the motor keeping belt tight.

*Mr. Robertson is Rural Service Engineer, East Tennessee Light and Power Co., Johnson City, Tenn.

load which is above the motor; then one rail is placed under the center of the board for use when pulling from the motor directly, and the third rail is placed just beyond the jack-shaft on that end of the board for use when pulling off the jack-shaft. The jack-shaft runs whenever the motor runs, the belt being permanently in place. The friction in the jack-shaft is small.

At each machine, notched motor rail supports are mounted to hold the motor assembly in position. The ends of the rails fit into these notches. The supports may be of either wood or metal. In all cases the distance of the portable motor jack-shaft from the driven machine is such that either a 44-inch or a 58-inch belt can be used. The photographs show just how the speed changer is used with different machines and how it is mounted in each case.

## Grinder "in the Clear"

This home-rigged grinder with a ¼ hp driving motor is different from the ones usually seen, and has several advantages. The stand may be made of the proper height for convenient use without stooping or standing in a tiring position. It is light enough so the whole stand may be moved to the place where the grinding is to be done. The big advantage, however, is in having the grinding head "in the clear" so there is nothing to bumb the sickle or blade on at front, back or either side.

The stand was built by Lester Christianson, New Lenox, Illinois. He has outlets in different buildings where he may wish to use it.

If it is desired to use the motor on different jobs, it may be mounted on a board which will slide onto a shelf within the stand. The end of the base can be pushed into a slot made for it at the rear of the shelf and the front end of the base tipped up to put on the belt. The motor can then be held in place by a wing-nut on a bolt which also acts as a belt tightener. The motor should be shielded in order to keep grindings from being drawn into the motor windings and bearings.

# Winter Use of Fans

There is a popular conception that an electric fan is a cooling device. In a way it is, but not always. I can hear the faint hum of the blower fan in my furnace now. It is driving warm air up into the room where I am writing. Other fans supply artificial draft for the furnace, take the cooking odors out of the kitchen and remove the dank, chilling air from the cow barn.

Whether a fan has a cooling effect depends upon the way it is used. True, most fans are sold in the summer time and for their cooling effect, but they can help keep you warm, too.

A fan does not cool the air. It merely circulates the air. If the air is relatively dry and you stand in the blast from the fan, moisture is evaporated from your skin. The process of evaporation cools you even if the air is warm. Fans are also used in food freezers for speeding the freezing process. Their function here is to remove the insulating film of warmer air that forms around the cooling product so the cold air has a chance to come in contact with it.

In the winter time, the fan that is removing dampness and exhaled moisture from your dairy barn is not only saving the timbers and making the barn smell sweeter and more sanitary, but it is making it more comfortable for the cows by removing the dampness.

The fan that supplies draft for your heating plant is not cooling the fire; it is bringing in oxygen to improve combustion.

### *An Aid in Air Circulation*

If you have a heating system without circulating fans and you have rooms where the floor and the air near the floor is cold, it is sometimes possible to make those rooms more comfortable by stirring up the air with a fan. Warm air is lighter than cold air, so it naturally rises to the ceiling. The air at the ceiling may be 10° warmer than at the floor. Place the fan near the stove or the register and point it up toward the ceiling, or above the windows, pointed down. What you want to do is to stir or circulate the air in the room, throwing the cold air up and bringing the warm air down without creating a draft. Similar arrangements may often be used to advantage in incubator cellars and other heated enclosures. *Geo. W. Kable.*

## Warship Uses as Much Electricity as City

The new battleship Iowa, the world's largest warcraft, has generator capacity of 10,500 kilowatts, which would be enough to supply a city of about 20,000. The ship has 1,300,000 feet of electric cable, 900 motors, 5,300 lighting fixtures and 1075 telephones. Since the first World War the use of electricity in the Navy as a whole has increased from about one-twentieth of a kilowatt per ton displacement to one-fourth kilowatt at present. Science News Letter.

Winter is the time to re-condition tools and machinery for summer use.

# Electrical Housekeeping

*Edited by* **GAIL MEREDITH**

## Blankets—Wired for Warmth

BILLY was eighteen a year ago last December. This year when he came home on furlough he had his gunner's wings, and was already training with a crew for combat duty on a bomber. He is a waist gunner, and of all the bewildering amount of new equipment he carries with him, his electrically heated flying suit, light, warm and flexible, is easily his favorite. When he flies, he plugs the cord attached to the suit into a socket provided for it near his gun.

***Blankets Like Fliers' Suit***

Those flying suits are first cousins to the electric blankets that were coming into popularity before the war. Perhaps you have one. If you have, you're lucky. Perhaps you've seen them in the windows of your electric company's store, and wondered just how they work.

They look about like any light, woolly blanket, unless you see the receptacle for the electric cord just above the binding at one end. You could not tell just by looking at them that there are fine strands of specially insulated wire woven somehow into the very texture of the blanket itself so all you see or touch on either side is the soft, fleecy surface.

When you spread the blanket on the bed, you do not plug its cord directly into a wall outlet, but you connect it to a tiny transformer, and the cord from the transformer goes to the convenience outlet. This transformer is a small box-like contrivance with a handle across the top through which you can slide a narrow bar to rest on the side pieces of the bed. The transformer reduces the voltage from 110-120 volts to about 10 volts before it enters the blanket. That voltage is lower than that used for a child's electric train.

A little brown box no bigger than a deck of cards holds the thermostat that controls the heat of the blanket. This control rests on a bedside table and can be adjusted to your liking for heat. It responds to the temperature changes in the room by turning the current on or off to maintain an even heat.

That is the trick of perfect comfort under an electric blanket. On an unexpectedly mild night no one twists and tosses under blankets suddenly too warm. The light blanket gives you just enough heat, no more. When the mercury plummets to the bottom of the tube in the middle of some frosty February night, you don't lie and shiver while you try to talk yourself into getting up for more blankets; you keep right on sleeping in comfort just as warm as you were before the temperature began its nose dive. The thermostat takes care of that.

Even with a window wide open and the wind blowing a perfect gale over your bed, your nose may be cold, but your body will lie warm and relaxed in perfect comfort under this combination of wool and wire.

When peace comes there will be a new crop of electric blankets to buy with war bonds.

**You can set the thermostat for the temperature you want—then forget the weather and sleep.**

## *Your* Electric Iron

Though it was reported at the beginning of the year that two million new electric irons will be made during 1944, that will not be enough to go around. You who have electric irons will still have to use the utmost care to keep them working well.

That means careful handling of the iron. It means pushing it back from the edge of the table so you won't brush it off accidentally; it means taking it off

he ironing board before you lift r move the board so it won't pple over on the floor. Falls

may injure the wiring or delicate parts of the thermostat or even break off the handle.

For easy ironing, you want the sole plate to stay smooth and unscarred. You must watch, then, not to iron over metal, over buttons, overall buckles, or zippers. You must keep the sole plate shining clean. If starch sticks to it, clean it off by running the warm iron over a bar of paraffin or over a little salt sprinkled on a piece of waxed paper. You can wash it, too. Just wait till the iron is almost cold, then wipe it off with a damp cloth, or wash it with soap suds. For stubborn spots use a little silver polish or very mild scouring powder. Be sure to wipe the sole plate clean with a damp cloth and rub it dry after you've scoured it. *Never, under any circumstances,* put the iron in water to wash it, or to cool it quickly.

Be careful not to overheat the iron. Letting an iron that has no thermostat overheat may burn out the elements, and it is likely to darken the sole plate and sides. The newer irons with 1,000-watt elements are designed to sit back on their heels when you leave them, not to rest on a stand. The heat from the iron, rising as it does, might otherwise damage the handle.

The cord for the iron comes in for its share of watching these days, too. There are simple ways of insuring it against undue wear. Set your ironing board so you can iron with the cord swinging freely, not pulled or twisted with every stroke of the iron. Don't let it rub against the edge of the ironing board as you work. That is bad for the cord. So is sliding the iron carelessly across it, letting it touch the hot sole plate, or winding it about the iron while it is still warm.

### *No Quick Repairing*

Since you can no longer run into town with an iron that doesn't heat and have the service man repair it for you while you do your shopping, it is probably just as well to be able to hold an occasional iron clinic right in your own kitchen.

If the iron does not heat there are several things you could check for yourself.

Is the plug pushed way in, firmly, so the connection is complete? If the plug does not fit firmly, you may improve matters by spreading the prongs a little or forcing them together, whichever it needs to make them fit securely.

There is the possibility that the heating element has burned out or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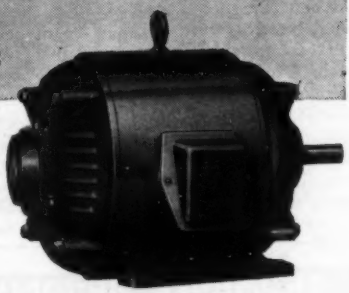

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that the thermostat is stuck. Both of these situations are beyond kitchen diagnosis or treatment. They need a trained repair man.

It is possible that the trouble is back of the iron and back of the cord, in the circuit itself. If another appliance plugged into the circuit works all right, you can see that the mischief is in the iron, but if the iron works on another circuit and not on the first, it looks as though there was trouble in the wiring that leads to this convenience outlet.

It may be a blown fuse. You can replace that. Trouble in the wiring calls for experienced help.

If you have an iron that heats up slowly, look to your thermostat. Perhaps it is set too low. But the most frequent cause is connecting the iron to a light socket, perhaps a drop cord from the ceiling. The wires leading to lamps are seldom heavy enough for the load an iron carries, and it will take a long time to heat. The remedy is simple. Connect the iron to a wall outlet.

If the iron gets too hot, look to your thermostat again, before you decide there is something wrong. Perhaps it is set too high. This may happen some day when you are not ironing as fast as usual. Just lower the setting of your thermostat a little.

It is possible that the thermostat is stuck open. Anything wrong with the thermostat calls for trained help.

Sometimes even a smooth, well kept iron will stick to the fabrics you are ironing. Perhaps the materials were not rinsed thoroughly; maybe you used a little too much starch. Maybe you aren't fitting the heat to the fabric you are ironing. That's very likely to be the case if you are ironing the new synthetics. If the iron is too hot, it is sure to stick. Study the thermostat setting or watch the heat to keep the temperature right.

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# A Course of Sprouts

There has been a good bit of talk lately about raising a crop of fresh green sprouts from vegetables or cereals right in your own kitchen in the dead of winter.

I do not mean that the idea is new. I suppose the Chinese have been doing it for thousands of years. On this side of the world, the British navy used fresh sprouts to combat scurvy a couple of hundred years ago. But the practice has never had general acceptance among cooks in this country.

Half a dozen years ago an article stimulating interest in it was published in *Better Homes and Gardens*, and Leaflet 166, "Soybeans for the Table," a U.S.D.A. publication, gave careful directions for sprouting either Mung beans, which are hard to find, or soy beans, which are rapidly becoming generally available as victory gardeners across the country add soys to their rows of beans.

Apparently it has taken our present acute interest in food values to incite women to grow a little Vitamin C in a bottle for a Sunday salad.

Dr. McCay at Cornell has done a good deal to revive interest in sprouting soy beans. Just recently a publication from Colorado State College reports work by Dr. Pyke in sprouting pinto beans, as well as peas, barley, and even wheat—for those who like variety in their green sprouts.

Recent research has shown that these beans sprouts are a source of Vitamin C that rivals tomatoes and that they provide carotene and riboflavin as well.

**The deep well cooker offers a convenient and economical way to cook beans.**

If you would like to start a little winter gardening of this kind for yourself, it will be an easy

### Soybean Recipes

**Cream Soybean Soup**

1 cup green or yellow soybeans
2 tbsp. butter — 1 quart milk
2 tbsp. flour — 1 tsp. salt
1 tbsp. onion — ⅛ tsp. pepper

Soak beans twelve hours; cook in water four hours or until tender. then rub through sieve. Brown the chopped onion in the butter, add flour, milk and bean pulp; boil one minute, stirring constantly; season and serve.

**Baked Soybeans**

The dry yellow Manchu soybean may be used in place of the white bean for Boston baked beans. The absence of starch causes the baked beans to remain separate rather than become mushy. The flavor is different, and some people mix the two beans in making the baked dish.

1½ cups yellow soy beans
½ cup white beans
⅓ cup molasses
¼ tsp. mustard
1 small onion
¼ pound salt pork

Soak beans twelve hours, put into baking dish in which the salt pork, onion, sugar, and mustard have been placed. Cover with cold water and cook in a slow oven at least twelve hours. Add water as needed.

**Yellow Soybean Souffle**

1 cup yellow soybeans
2 tbsp. butter — 3 eggs
4 tbsp. flour — 1 tsp. salt
1 cup milk — ⅛ tsp. pepper

Soak beans and cook in boiling water until tender, about four hours; drain and rub through a strainer. Melt butter, add flour and milk and boil one minute, stirring constantly; add two cups of the bean pulp, cool and add the beaten egg yolks and seasoning. Beat the whites of the eggs until stiff and fold into the bean mixture. Put in a buttered baking dish and bake in a moderate oven thirty minutes. 350 degrees. Serve at once.

From *Soybean Dishes New and Old, College of Agriculture, University of Wisconsin.*


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job. The crop season from sowing to harvest is only three to five days. If you raised soy beans in your own garden this year, use those for this new experiment for you want this year's beans so you can be sure they'll sprout.

Wash half a cupful and pick them over carefully to select whole, sound beans. Soak them over night, starting them with just a pinch of chlorinated lime in warm water. The chlorine is to keep the beans from molding. In the morning, drain them and rinse them with clear water. Then plant them in a quart jar and fill the jar with water. Tie a cheesecloth over the mouth of the jar and turn the jar up on a slant so the water will drain out slowly, and yet there will be a chance for air to get into the jar. The beans need a warm place, and they need darkness—until the sprouts are well along at least. If you want to tilt the jar in a rack on your sink, cover the jar to keep the light from the beans.

Two or three times a day flood the jar with fresh water, and invert it again. Each night rinse the beans with chlorinated lime water and drain the same way.

In three to five days — the sprouting time will differ with the variety—the beans will have long, white, yellow tipped shoots ready for the eating.

Dr. Pyke of Colorado State College recommends moving the jar into the light as the sprouts begin to shoot out of the beans so the light can turn them green and develop the carotene which is the form of Vitamin A found in vegetables.

From then on cooks differ. Both beans and sprouts may be boiled together with a little fat and a few thin slices of onions. The sprouts may be used raw in vegetable salads, or added the last few minutes to omelets, soups or stews. Of they may be cooked briefly before you use them in these dishes.

If you do not use all of your crop at once, the sprouts can be kept in the refrigerator like any fresh vegetable.

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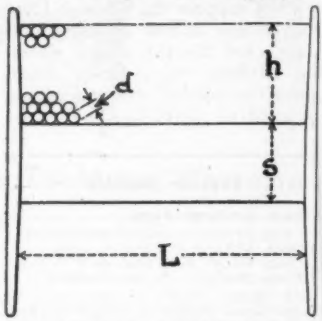
## How Much Rope On a Reel

When a rope, cable or wire is wound on a drum or reel, the rope seeks the "valleys" between the turns of the layer beneath it. To determine the number of feet of rope or cable which are on a drum which is smoothly wound, without unwinding it, you can use the following rule to compute it.

To the depth of the rope on the drum "h," add "s," the diammeter of the drum. All measurements must be in inches. Multiply that sum by the depth "h" and by the inside length of the drum "L." Divide by the square of the diammeter of the rope or cable "d," and lastly multiply by 0.262. The answer is the length in feet. Stated as a formula, it is




$$\text{Length} = \frac{(h + s)\, h \times L \times 0.262}{d \times d}$$

Take, for example, an 8" diameter hoist drum on which there is a 5" depth ("h") of rope that is ½" in diameter (d). The inside length of the drum (L) is 20". Applying the rule

$$\text{Length} = \frac{(5 + 8)\, 5 \times 20 \times 0.262}{½ \times ½} = 1362 \text{ feet}$$

W. F. SCHAPHORST

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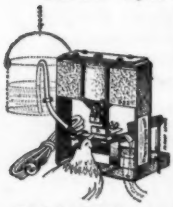

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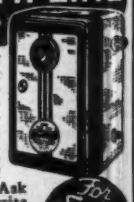

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## Genial, Versatile, C.S. Ed.

"C. S." stands for common sense. "Ed" is what everyone calls Edwin Wells Mitchell, WGY's farm philosopher, and one-man "Farm Information Please" panel. If you are too far away to hear Ed you are missing two intensely interesting and helpful farm broadcasts every week. We want you to know about Ed anyway, for he is worth knowing,—and we are using quite a few of his comments in ELECTRICITY ON THE FARM.—Just can't help it. They're full of good honest, horse-sense information with a sparkle that makes them easy reading. Read on and you'll know why. In response to requests from listeners, Ed gave this on the air. He did it better than I could tell it.

"I was born in Cincinnati, Ohio; spent part of my youth on a farm at Zanesville; left high school and college periodically to be a cowboy, sheep herder, and a hobo, but finally came back and finished my Ag. course at Cornell and taught there one year. Bought a farm, bought another, set up as a consultant, managed about a dozen other farms, and acted as a traveling salesman for spray materials during the winters. Got married and have three children, make my living growing apples and pears, and have 103 acres of orchard.

"I have worked in 37 out of the 48 states, and traveled Canada in the winter. I broke horses for Buffalo Bill Cody that he sold to the British Government for shipment to South Africa during the Boer War, and helped to run 23 carloads of Indian ponies out of the Columbia River Breaks to be shot down in Africa. I herded sheep in Montana and Wyoming when the cattlemen were trying to keep sheep off the ranges. I worked as a bridge carpenter when the new railroad went through Miles City, and they worked men in gangs of a thousand or more and *what* a choice collection they were. I packed peaches in Georgia, drove oxen in the turpentine woods in Alabama, have missed the chain gang by the slim margin of a sheltering tree, and have occasionally preached a sermon. I have harvested ice for $2.00 a day when it was 20 below on the river and 10 hours seemed like 10 days, and have dug ditches when the thermometer was 125 deg. F. and no shade to hang it in. I have peddled apples, from house to house and spent weary hours on the farmer's markets. I have been President of the New York State Horticultural Society, Chairman of the Conference Board of New York State Farm Organizations, Superintendent of a Sunday School, and Boy Scout Master. The only thing I have utterly failed at is singing but I have tried that, too."

The picture is of Ed (at the left) and Emerson Markham, who is in charge of agricultural broadcasting for the General Electric Station WGY in Schenectady, N. Y. It was taken at a recent WGY Farm Forum broadcast from the Chapel of Union College at which National Grange Master Goss and Editor Kable of ELECTRICITY ON THE FARM were the other two speakers.

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# Electric Heat Here and There

Do you have any chilly spots around the house, in the bathroom or the brooder house or shop that need a little extra heat. Electricity can probably help you out.

If you want to warm a little area in a big room without heating the whole room, you should use a radiant heater. A radiant heater may be made of a glowing coil or a lamp in a reflector mount, or it may be one of the new built-in reflector heat lamps. Those heaters do not warm the air in the room greatly but they warm the object at which they are directed.

### How to Heat a Room

Where it is desired to heat the air in a room—the whole room, a different type of heater should be used. It should combine a heater for the air and some means for circulating the air. Before the war there were many small electric heaters on the market combining a heating element and a circulating fan. The electric-steam radiator is also of this type. It heats the air and sends a column of warmed air upward which sets up air circulation. Convection type room heaters are also made on this principle. They are made in portable units or types to be built into the wall.

A heater for taking the chill off from a shop or apple packing room may be made by placing a heating element or large lamp in the lower end of a four foot length of 6 or 8 inch pipe placed vertically. If a wood pipe or flue is used, it should be protected at the heater by asbestos paper. This flue or chimney will set up a circulation of warm air. The rate of heating will be governed by the size of heater used.

### Spot Warming

For spot warming, the electric heating pad produces a mild, somewhat moist type of heat by contact (the moisture from perspiration). A more intense and penetrating heat may be obtained by placing oneself in the infrared rays of a heat lamp, the radiant heater, described above or an ordinary Mazda lamp of the reflector type or in a concentrating reflector.

Ed. Mitchell, spotlighted elsewhere in this issue, says that since he is not permitted to have puppies and baby pigs in the kitchen and sit with his feet in the oven, he has put a 100 watt bulb in a socket in the wall under his desk to keep his feet warm. It heats that little "foot room" very nicely. (If you must have pigs, Ed, of course there's the pig brooder.)

The use of radiant heaters and lamps in pig brooders was described in the January issue. These heating units have also been used effectively for saving new born lambs.

A lamp hung under the hood of an automobile or a radiant heater or heat lamp with reflector placed under the crank-case of a tractor will make starting much easier and save batteries. G.W.K.

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"If freedom from want does not make headway everywhere in the world, the machine age is doomed. For it produces wealth—the real wealth of stoves and cars and plows and reapers which no man can hoard, but men everywhere can use. That wealth of the common man, that freedom from want, government with all its power cannot achieve. It is the products of the energies, wills, imaginations, and skills of individuals." Dr. Henry M. Wriston, president of Brown University, in the book "Challenge to Freedom."

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—I'm proud I am a farmer!—

## How to Save Galvanized Roofs

Mr. K. J. T. Ekblaw, Agricultural Engineer, American Zinc Institute gives the following suggestions for making galvanized roofs last longer.

1. Be sure the rafters, braces and plates are not warped or twisted out of shape. If they are, straighten them.

2. Realign the roofing sheets so the corrugations or V-crimps are straight and fit properly. Some sheets may have to be removed and relaid.

3. Renail if ordinary nails were used and the nails or sheets around them are badly rusted, or the nails are loose. It is best to remove the nails and use special roofing nails preferably with lead washers under the heads. Use 2½ or 2¾ inch nails.

4. If the zinc coating is getting thin or rust is showing, clean off all loose rust with a wire brush. Hose the roof clean and let it dry. Then apply two coats of metallic zinc paint made of 80 percent zinc dust, 20 percent zinc oxide in a vehicle of either linseed oil, soya bean oil or some quick drying synthetic resin. (Available ready mixed.) Under average conditions this paint should give protection for twelve to fifteen years.

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"The bureaucratic belief that citizens are not competent to exercise self-government in their own state lays the axe at the root of our federal system. It ought to be repudiated." Dr. Henry M. Wriston in the book "Challenge to Freedom."

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## USDA Directory—Chickens of Merit

The USDA has completed its latest revision of the directory of birds that have qualified for the U.S. Register of Merit. This is the highest rating under the National Poultry Improvement Plan. The directory is intended as a guide to purchasers of foundation poultry breeding stock. Eight breeds of chickens are included. Price 10c, Superintendent of Documents, Washington 25, D. C.

## Apples Thinned by Spraying

Certain varieties of apples, including Yellow Transparents, Dutchess, Wealthy, Rome Beauty and Baldwins are self-fruitful. Some of them have a habit of setting many fruits and of bearing only once in two years. In the fruiting year it is necessary to thin out the blossoms or fruit in order to get large size apples. This is a tedious and expensive job. For two years Dr. Melvin B. Hoffman of the Pomology Department of Cornell University, Ithaca, N. Y., has been experimenting in orchards in an effort to perfect a spray which could be applied at blossoming time to thin the "set" of fruit without doing the hand thinning. While the process is still in the experimental stage, some most encouraging results have been obtained with a spray of a dilute solution of dinitro-cresol. It must be applied on just the right day as the tree comes into full blossom.

The spray has had most surprising results. Not only is it reported to have cut down the cost of thinning very materially, but it has increased the size of apples and the yield over hand thinning, and most surprising of all, it is apparently breaking the biennial bearing habit so the trees yield a crop every year.

The average human *heart*, weighing about one-half pound, generates enough energy in twelve hours to lift a tank car of 65 tons one foot from the ground.

# Questions and Answers

### Repairing Soil Heating Cable

▶**Question:** *I have a soil heating cable which I cannot use satisfactorily because the lead covering is broken in three places. When I use the cable it takes three or four times as much current as it should. Can you refer me to some one, preferably near Chicago, to whom I might send this cable for repair?* B. H., Ill.

▶**Answer:** I cannot tell you who to take your soil heating cable to for repairs, but I can tell you how to fix it for yourself.

Carefully remove the lead sheath from the cable about two or three inches back in each direction from the break. Leave the asbestos insulation on the wire, then wrap the wire tightly with rubber insulating tape, lapping the tape about an inch back over the edge of the cut lead sheath. Then, cover the whole joint with friction tape; if the wire itself is broken, wrap the two ends around a small stove bolt, between washers and tighten the nut on the bolt. Wrap the spliced wire with insulating tape. In using the cable, keep these repaired sections above ground and protected from water so moisture will not get into the heating elements.

### Electric House Heating

▶**Question:** *We are living in an unfinished house and planning our heating system. What about electricity? Is it as economical as other methods? We have no basement. Is there a booklet or leaflet we might get to help us plan?*
Mrs. P. C., Texas

▶**Answer:** Many houses in the United States, particularly in the Southern states are now being heated electrically. In places where the cost of electricity gets down to 1c per kw-hr or less and where the climate is not too severe, it may be economical to heat with electricity.

Where electricity is used, each room has its own separate heater and control. In this way not all of the house needs to be heated and the rooms that are to be used can be heated rather quickly.

In the Tennessee Valley many homes are heated with electricity. On a recent trip to Knoxville I checked the power bills in one home and found the heating cost to be very much the same as I paid for coal when I lived in Knoxville. Those houses, however, are well insulated and only the rooms are heated that are being used.

Generally speaking it costs more to heat with electricity than with fuel. There is an advantage of course, in getting away from the dirt and labor of handling fuel and in the convenience of the electric heat.

You can get information on the type of heater used in Knoxville homes by writing to the Wessix Electric Company, San Francisco,

1 **LABOR-FREE GRINDING:** Viking Exclusive self-feeding mechanism makes automatic grinding possible—All you have to do is start the mill and go on with your regular work.

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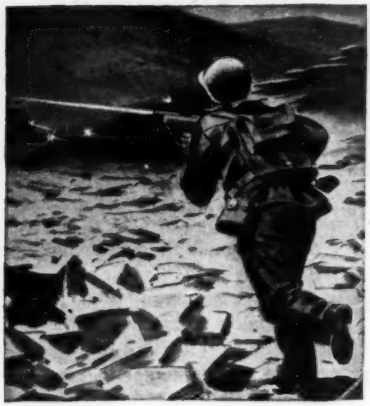

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Joe Martinez, Colorado farm boy, his battalion bogged down under withering fire from Jap positions on Attu, arose alone and advanced into a hail of bullets to clean out trench after trench so his battalion could advance. He died with his rifle at his shoulder, pumping lead into the enemy. Let every one buy an extra war bond in Joe's honor . . . for Joe took the bullets aimed at the heart of America!

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***Keep Backing The Attack!***

*This advertisement prepared under the auspices of the War Advertising Council and the U.S. Treasury Department*

This space is a contribution to our country by

**ELECTRICITY ON THE FARM**

Calif. The Burnham Boiler Company, Irvington, N. Y. makes electric steam radiators which may be used similarly.

## Electric Caponizer

▶**Question:** *Can you tell me where I may secure electrical equipment for caponizing?* L. O. S., Ohio

▶**Answer:** Electric caponizing sets are available from George Beuoy, Cedar Vale, Kans.

## Wire Sizes for Water Warmers and Lights

▶**Question:** *Would you please advise me how large an electric wire I will need to use 6 or 8 electric Trumbull water warmers? I have these on 2 wires and don't know if they are heavy enough.*

*Also, will you please let me know if No. 14 wire is heavy enough to carry 500 and 750 watts in electric light bulbs.* F. C. L., Conn.

▶**Answer:** Trumbull water warmers use about 155 watts. You can use three of them on #14 wire at a distance of 140 ft from your entrance switch with a voltage drop of 3 volts which would be quite satisfactory. You can use eight of these heaters on #14 wire at a distance of 36 ft from your entrance service with the same voltage drop.

We would never recommend using #14 wire to supply any heating devices, nor is it good practice to use anything smaller than #10 wire out of-doors where it is likely to carry an ice or snow load. The trouble with using this small wire is that it may break under mechanical load or you may be tempted to put on just a little more load of appliances and then your voltage drops down to the point where you will not get the rated light or heat from the appliance.

If you use #10 wire for your eight heaters, you can run a distance of 94 ft from the service with a 3 volt drop, and if you use #8 wire you can run 146 ft.

For a wire supplying light, the same comments made above regarding outside wires apply. For inside wiring, allowing a voltage drop of 3 volts, you can run 134 ft from the service to supply 500 watts in lamps, or 90 ft from the service to supply 750 watts on #14 wire.

## Wet Litter

▶**Question:** *The room in which I am housing a flock of about 30 hens is in the rear of a barn, of cement construction to about waist height and one side and one end face into the open barn cellar while the other side and end abut the ground outside which is about waist height.*

*This room has a cement floor to keep the rats out. Right now I am beginning to have trouble with the moisture condensing on the floor and making the litter damp within a very few days of when it is put in. I have used straw, shavings and shavings with sawdust. The straw was most unsatisfactory. It seems as the the shavings worked best of all. Also have you any suggestions as to litter?*

*I think this is a problem of ventilation. Can you suggest how I should ventilate this room, where the inlet and outlet ought to be and whether a fan would be required, and if so, how much of the time it ought to run?* G. R., Mass.

▶**Answer:** You should be able to ventilate your poultry house adequately by having the windows arranged on one side opposite the direction of the prevailing wind so they may be opened in at the top. Don't be afraid to let in some air, just so you don't have drafts.

Your wet litter is probably not due entirely to poor ventilation. Your concrete floor and walls below the ground level are bound to be relatively cool. Any moisture in the house will condense on a cold surface. Peat moss is probably the best litter for keeping the floor dry because it is a good insulator. You can probably get away from the dampness somewhat by building up the litter on the floor to a depth of 8" or 10" or more. Just add clean litter on top and don't clean the old litter out until spring. Shredded corn stalks, chopped corn cobs or shavings make good litter.

Canning was developed as a result of a prize offered by Napoleon Bonaparte.

Maps printed with *flourescent ink* on special paper are used in combat areas; they can be read at night without other illumination.

Nine war-built *aluminum* production plants owned by the government have an annual capacity of 1,200,000,000 pounds.

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***"No matter who you are or where you live Surge Service is still available at a reasonable cost."***

That is an important point to remember about anything so absolutely essential as a milking machine.

If YOU have had to wait a long time for YOUR new Surge it is not because we are not making a lot of them, but because so many of your neighbors also like the Surge Milker and the Surge Service that makes it keep right on being a good milker.

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